

=&gt; d his ful

(FILE 'CAPLUS, WPIX, BIOSIS, MEDLINE' ENTERED AT 09:28:48 ON 25 JAN 2007)  
DEL HIS Y

FILE 'CAPLUS' ENTERED AT 10:09:46 ON 25 JAN 2007

L1 14 SEA ABB=ON PLU=ON BETA IGH3/OBI OR BETA IG H3 BETAIG H3/OBI  
D SCAN  
L2 253 SEA ABB=ON PLU=ON (BIGH3 OR BETA IGH3 OR BETA (2W) IG H3  
)/BI  
L3 126 SEA ABB=ON PLU=ON BETA INDUC? GENE H3/OBI  
L4 17 SEA ABB=ON PLU=ON (BETA INDUC? GENE H3)/AB  
L5 254 SEA ABB=ON PLU=ON (L1 OR L2 OR L3 OR L4)

FILE 'REGISTRY' ENTERED AT 10:15:33 ON 25 JAN 2007

E CHITOSAN/CN  
L6 1 SEA ABB=ON PLU=ON CHITOSAN/CN  
D RN  
D

FILE 'CAPLUS' ENTERED AT 10:16:10 ON 25 JAN 2007

L7 24547 SEA ABB=ON PLU=ON L6 OR CHITOSAN/OBI  
L8 3 SEA ABB=ON PLU=ON L5 AND L7  
L9 195 SEA ABB=ON PLU=ON (IG H3)/BI  
L10 3 SEA ABB=ON PLU=ON L9 AND L7  
L11 3 SEA ABB=ON PLU=ON L10 OR L8  
L12 30688 SEA ABB=ON PLU=ON TRANSFORMING GROWTH FACTOR#/OBI (L)  
BETA/OBI  
L13 122 SEA ABB=ON PLU=ON L12 AND L7  
L14 17775 SEA ABB=ON PLU=ON POLYPHOSPHAT?/OBI OR TRIPOLYPHOSPHATE?/OBI  
L15 4 SEA ABB=ON PLU=ON L14 AND L13  
D SCAN TI  
L16 161 SEA ABB=ON PLU=ON (TRANSFORMING GROWTH FACTOR#/OBI OR  
TGF/OBI) (L) H3/OBI  
L17 2 SEA ABB=ON PLU=ON L16 AND L7  
L18 5 SEA ABB=ON PLU=ON L17 OR L15 OR L11  
D SCAN TI  
L19 2444 SEA ABB=ON PLU=ON CHO B?/AU  
L20 6950 SEA ABB=ON PLU=ON KIM I?/AU  
L21 9373 SEA ABB=ON PLU=ON L19 OR L20  
L22 72 SEA ABB=ON PLU=ON L21 AND L7  
L23 2 SEA ABB=ON PLU=ON L22 AND L14  
D SCAN  
L24 3 SEA ABB=ON PLU=ON L22 AND (L5 OR L12 OR L16)  
L25 3 SEA ABB=ON PLU=ON L24 OR L23  
L26 0 SEA ABB=ON PLU=ON L25 NOT L18  
D SCAN TI L25

FILE 'WPIX, BIOSIS, MEDLINE' ENTERED AT 10:22:57 ON 25 JAN 2007

L27 18811 SEA ABB=ON PLU=ON L6 OR CHITOSAN  
L28 420 SEA ABB=ON PLU=ON L5  
L29 6 SEA ABB=ON PLU=ON L27 AND L28  
D SCAN TI  
L30 403 SEA ABB=ON PLU=ON BETAIG(W) H3  
L31 3 SEA ABB=ON PLU=ON L30 AND L27  
L32 6 SEA ABB=ON PLU=ON L31 OR L29  
L33 11073 SEA ABB=ON PLU=ON KIM I?/AU  
L34 3834 SEA ABB=ON PLU=ON CHO B?/AU  
L35 14801 SEA ABB=ON PLU=ON (L33 OR L34)

Ernst Arnold 10/528,750

L36 77 SEA ABB=ON PLU=ON L35 AND L27  
L37 6 SEA ABB=ON PLU=ON L36 AND (L28 OR L30)  
L38 0 SEA ABB=ON PLU=ON L37 NOT L32

FILE 'EMBASE' ENTERED AT 10:27:18 ON 25 JAN 2007

L39 202 SEA ABB=ON PLU=ON L5 OR L30  
L40 4398 SEA ABB=ON PLU=ON L6 OR CHITOSAN  
L41 1 SEA ABB=ON PLU=ON L39 AND L40  
L42 32507 SEA ABB=ON PLU=ON TRANSFORMING GROWTH FACTOR# (2A) BETA  
L43 37 SEA ABB=ON PLU=ON L42 AND L40  
L44 3472 SEA ABB=ON PLU=ON ?POLYPHOSPHATE?  
L45 1 SEA ABB=ON PLU=ON L44 AND L43  
L46 2 SEA ABB=ON PLU=ON L41 OR L45  
L47 1824 SEA ABB=ON PLU=ON KIM I?/AU  
L48 759 SEA ABB=ON PLU=ON CHO B?/AU  
L49 2557 SEA ABB=ON PLU=ON (L47 OR L48)  
L50 18 SEA ABB=ON PLU=ON L49 AND L40  
L51 1 SEA ABB=ON PLU=ON L50 AND (L39 OR L42)  
L52 0 SEA ABB=ON PLU=ON L51 NOT (L41 OR L46)  
L53 2 SEA ABB=ON PLU=ON L41 OR L46

FILE 'WPIX, BIOSIS, MEDLINE' ENTERED AT 10:32:02 ON 25 JAN 2007

L54 75622 SEA ABB=ON PLU=ON TRANSFORMING GROWTH FACTOR# (2A) BETA  
L55 102 SEA ABB=ON PLU=ON L54 AND L27  
L56 19590 SEA ABB=ON PLU=ON L44  
L57 2 SEA ABB=ON PLU=ON L55 AND L56  
L58 7 SEA ABB=ON PLU=ON L57 OR L37

FILE 'CAPLUS, WPIX, MEDLINE, EMBASE' ENTERED AT 10:33:47 ON 25 JAN 2007

L59 6 DUP REM L18 L57 L53 (3 DUPLICATES REMOVED)  
ANSWERS '1-5' FROM FILE CAPLUS  
ANSWER '6' FROM FILE EMBASE  
D QUE L38

=> fil reg

FILE 'REGISTRY' ENTERED AT 10:36:12 ON 25 JAN 2007  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2007 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file  
provided by InfoChem.

STRUCTURE FILE UPDATES: 24 JAN 2007 HIGHEST RN 918400-64-3  
DICTIONARY FILE UPDATES: 24 JAN 2007 HIGHEST RN 918400-64-3

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH June 30, 2006

Please note that search-term pricing does apply when  
conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and  
predicted properties as well as tags indicating availability of  
experimental property data in the original document. For information  
on property searching in REGISTRY, refer to:

<http://www.cas.org/ONLINE/UG/regprops.html>

=> d que 16 ; d 16

L6 1 SEA FILE=REGISTRY ABB=ON PLU=ON CHITOSAN/CN

L6 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2007 ACS on STN

RN 9012-76-4 REGISTRY

ED Entered STN: 16 Nov 1984

CN Chitosan (8CI, 9CI) (CA INDEX NAME)

OTHER NAMES:

CN 100D-VL

CN Amidan

CN BC 10

CN BC 10 (polysaccharide)

CN Biopolymer L 112

CN C 60M

CN Chicol

CN Chirosan 100

CN Chitan, N-acetyl-

CN Chitech

CN Chitin D

CN Chitin, N-deacetyl-

CN Chitoclear

CN Chitoclear 400

CN ChitoClear FG 95

CN Chitoclear TM 1111

CN Chitoclear TM 1220

CN Chitoclear TM 588

CN Chitoclear TM 656

CN Chitofos

CN Chitolaze

Ernst Arnold 10/528,750

CN Chitoparl 3510  
CN Chitoparl AL 10  
CN Chitoparl BC 3000  
CN Chitoparl BCW 2500  
CN Chitoparl BCW 3000  
CN Chitoparl BCW 3500  
CN Chitoparl BCW 3505  
CN Chitoparl BCW 3507  
CN Chitoparl K 20  
CN Chitosan 10B  
CN Chitosan 500  
CN Chitosan CLH  
CN Chitosan EL  
CN Chitosan F  
CN Chitosan FL  
CN Chitosan H  
CN Chitosan LL  
CN Chitosan LL 80  
CN Chitosan LLWP  
CN Chitosan M  
CN Chitosan MP  
CN Chitosan PSH  
CN Chitosan VL  
CN Chitosan WL-M  
CN Chitosano 90%  
CN Chitosol  
CN Chitosom  
CN Crystan LA-S  
CN CTA 1 Lactic Acid

ADDITIONAL NAMES NOT AVAILABLE IN THIS FORMAT - Use FCN, FIDE, or ALL for  
DISPLAY

DR 57285-05-9, 191045-06-4

MF Unspecified

CI PMS, COM, MAN

PCT Manual registration, Polyother, Polyother only

LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, AQUIRE, BIOSIS, BIOTECHNO, CA,  
CABA, CAPLUS, CASREACT, CBNB, CHEMCATS, CHEMLIST, CIN, CSCHEM, CSNB,  
DDFU, DRUGU, EMBASE, HSDB\*, IFICDB, IFIPAT, IFIUDB, IMSDRUGNEWS,  
IMSRESEARCH, IPA, MEDLINE, NAPRALERT, PHAR, PIRA, PROMT, RTECS\*,  
SCISEARCH, TOXCENTER, TULSA, USAN, USPAT2, USPATFULL, VTB

(\*File contains numerically searchable property data)

Other Sources: NDSL\*\*, TSCA\*\*, WHO

(\*\*Enter CHEMLIST File for up-to-date regulatory information)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

21184 REFERENCES IN FILE CA (1907 TO DATE)

3391 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA

21351 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> fil caplus wpiz biosis medline embase

'WPIZ' IS NOT A VALID FILE NAME

ENTER A FILE NAME OR (IGNORE):end

=> fil caplus wpix biosis medline embase

FILE 'CAPLUS' ENTERED AT 10:36:54 ON 25 JAN 2007

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
 COPYRIGHT (C) 2007 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'WPIX' ENTERED AT 10:36:54 ON 25 JAN 2007  
 COPYRIGHT (C) 2007 THE THOMSON CORPORATION

FILE 'BIOSIS' ENTERED AT 10:36:54 ON 25 JAN 2007  
 Copyright (c) 2007 The Thomson Corporation

FILE 'MEDLINE' ENTERED AT 10:36:54 ON 25 JAN 2007

FILE 'EMBASE' ENTERED AT 10:36:54 ON 25 JAN 2007  
 Copyright (c) 2007 Elsevier B.V. All rights reserved.

=> d que 159

L1	14	SEA FILE=CAPLUS ABB=ON	PLU=ON	BETA IGH3/OBI OR BETA IG H3 BETAIG H3/OBI
L2	253	SEA FILE=CAPLUS ABB=ON	PLU=ON	(BIGH3 OR BETA IGH3 OR BETA (2W) IG H3 )/BI
L3	126	SEA FILE=CAPLUS ABB=ON	PLU=ON	BETA INDUC? GENE H3/OBI
L4	17	SEA FILE=CAPLUS ABB=ON	PLU=ON	(BETA INDUC? GENE H3)/AB
L5	254	SEA FILE=CAPLUS ABB=ON	PLU=ON	(L1 OR L2 OR L3 OR L4)
L6	1	SEA FILE=REGISTRY ABB=ON	PLU=ON	CHITOSAN/CN
L7	24547	SEA FILE=CAPLUS ABB=ON	PLU=ON	L6 OR CHITOSAN/OBI
L8	3	SEA FILE=CAPLUS ABB=ON	PLU=ON	L5 AND L7
L9	195	SEA FILE=CAPLUS ABB=ON	PLU=ON	(IG H3)/BI
L10	3	SEA FILE=CAPLUS ABB=ON	PLU=ON	L9 AND L7
L11	3	SEA FILE=CAPLUS ABB=ON	PLU=ON	L10 OR L8
L12	30688	SEA FILE=CAPLUS ABB=ON	PLU=ON	TRANSFORMING GROWTH FACTOR#/OBI (L) BETA/OBI
L13	122	SEA FILE=CAPLUS ABB=ON	PLU=ON	L12 AND L7
L14	17775	SEA FILE=CAPLUS ABB=ON	PLU=ON	POLYPHOSPHAT?/OBI OR TRIPOLYPHO SPHATE?/OBI
L15	4	SEA FILE=CAPLUS ABB=ON	PLU=ON	L14 AND L13
L16	161	SEA FILE=CAPLUS ABB=ON	PLU=ON	(TRANSFORMING GROWTH FACTOR#/OB I OR TGF/OBI) (L) H3/OBI
L17	2	SEA FILE=CAPLUS ABB=ON	PLU=ON	L16 AND L7
L18	5	SEA FILE=CAPLUS ABB=ON	PLU=ON	L17 OR L15 OR L11
L27	18811	SEA L6 OR CHITOSAN		
L30	403	SEA BETAIG(W) H3		
L39	202	SEA FILE=EMBASE ABB=ON	PLU=ON	L5 OR L30
L40	4398	SEA FILE=EMBASE ABB=ON	PLU=ON	L6 OR CHITOSAN
L41	1	SEA FILE=EMBASE ABB=ON	PLU=ON	L39 AND L40
L42	32507	SEA FILE=EMBASE ABB=ON	PLU=ON	TRANSFORMING GROWTH FACTOR# (2A) BETA
L43	37	SEA FILE=EMBASE ABB=ON	PLU=ON	L42 AND L40
L44	3472	SEA FILE=EMBASE ABB=ON	PLU=ON	?POLYPHOSPHATE?
L45	1	SEA FILE=EMBASE ABB=ON	PLU=ON	L44 AND L43
L46	2	SEA FILE=EMBASE ABB=ON	PLU=ON	L41 OR L45
L53	2	SEA FILE=EMBASE ABB=ON	PLU=ON	L41 OR L46
L54	75622	SEA TRANSFORMING GROWTH FACTOR#		(2A) BETA
L55	102	SEA L54 AND L27		
L56	19590	SEA L44		
L57	2	SEA L55 AND L56		
L59	6	DUP REM L18 L57 L53		(3 DUPLICATES REMOVED)

=> d que 126; d que 138

L1	14	SEA FILE=CAPLUS ABB=ON	PLU=ON	BETA IGH3/OBI OR BETA IG H3 BETAIG H3/OBI
----	----	------------------------	--------	--

# Ernst Arnold 10/528,750

L2	253	SEA FILE=CAPLUS ABB=ON PLU=ON (BIGH3 OR BETA IGH3 OR BETA (2W) IG H3 )/BI
L3	126	SEA FILE=CAPLUS ABB=ON PLU=ON BETA INDUC? GENE H3/OBI
L4	17	SEA FILE=CAPLUS ABB=ON PLU=ON (BETA INDUC? GENE H3)/AB
L5	254	SEA FILE=CAPLUS ABB=ON PLU=ON (L1 OR L2 OR L3 OR L4)
L6	1	SEA FILE=REGISTRY ABB=ON PLU=ON CHITOSAN/CN
L7	24547	SEA FILE=CAPLUS ABB=ON PLU=ON L6 OR CHITOSAN/OBI
L8	3	SEA FILE=CAPLUS ABB=ON PLU=ON L5 AND L7
L9	195	SEA FILE=CAPLUS ABB=ON PLU=ON (IG H3)/BI
L10	3	SEA FILE=CAPLUS ABB=ON PLU=ON L9 AND L7
L11	3	SEA FILE=CAPLUS ABB=ON PLU=ON L10 OR L8
L12	30688	SEA FILE=CAPLUS ABB=ON PLU=ON TRANSFORMING GROWTH FACTOR#/OBI (L) BETA/OBI
L13	122	SEA FILE=CAPLUS ABB=ON PLU=ON L12 AND L7
L14	17775	SEA FILE=CAPLUS ABB=ON PLU=ON POLYPHOSPHAT?/OBI OR TRIPOLYPHO SPHATE?/OBI
L15	4	SEA FILE=CAPLUS ABB=ON PLU=ON L14 AND L13
L16	161	SEA FILE=CAPLUS ABB=ON PLU=ON (TRANSFORMING GROWTH FACTOR#/OB I OR TGF/OBI) (L) H3/OBI
L17	2	SEA FILE=CAPLUS ABB=ON PLU=ON L16 AND L7
L18	5	SEA FILE=CAPLUS ABB=ON PLU=ON L17 OR L15 OR L11
L19	2444	SEA FILE=CAPLUS ABB=ON PLU=ON CHO B?/AU
L20	6950	SEA FILE=CAPLUS ABB=ON PLU=ON KIM I?/AU
L21	9373	SEA FILE=CAPLUS ABB=ON PLU=ON L19 OR L20
L22	72	SEA FILE=CAPLUS ABB=ON PLU=ON L21 AND L7
L23	2	SEA FILE=CAPLUS ABB=ON PLU=ON L22 AND L14
L24	3	SEA FILE=CAPLUS ABB=ON PLU=ON L22 AND (L5 OR L12 OR L16)
L25	3	SEA FILE=CAPLUS ABB=ON PLU=ON L24 OR L23
L26	0	SEA FILE=CAPLUS ABB=ON PLU=ON L25 NOT L18

L1	14	SEA FILE=CAPLUS ABB=ON PLU=ON BETA IGH3/OBI OR BETA IG H3 BETAIG H3/OBI
L2	253	SEA FILE=CAPLUS ABB=ON PLU=ON (BIGH3 OR BETA IGH3 OR BETA (2W) IG H3 )/BI
L3	126	SEA FILE=CAPLUS ABB=ON PLU=ON BETA INDUC? GENE H3/OBI
L4	17	SEA FILE=CAPLUS ABB=ON PLU=ON (BETA INDUC? GENE H3)/AB
L5	254	SEA FILE=CAPLUS ABB=ON PLU=ON (L1 OR L2 OR L3 OR L4)
L6	1	SEA FILE=REGISTRY ABB=ON PLU=ON CHITOSAN/CN
L27	18811	SEA L6 OR CHITOSAN
L28	420	SEA L5
L29	6	SEA L27 AND L28
L30	403	SEA BETAIG(W) H3
L31	3	SEA L30 AND L27
L32	6	SEA L31 OR L29
L33	11073	SEA KIM I?/AU
L34	3834	SEA CHO B?/AU
L35	14801	SEA (L33 OR L34)
L36	77	SEA L35 AND L27
L37	6	SEA L36 AND (L28 OR L30)
L38	0	SEA L37 NOT L32

=> d que 152

L1	14	SEA FILE=CAPLUS ABB=ON PLU=ON BETA IGH3/OBI OR BETA IG H3 BETAIG H3/OBI
L2	253	SEA FILE=CAPLUS ABB=ON PLU=ON (BIGH3 OR BETA IGH3 OR BETA (2W) IG H3 )/BI
L3	126	SEA FILE=CAPLUS ABB=ON PLU=ON BETA INDUC? GENE H3/OBI

## Ernst Arnold 10/528,750

L4 17 SEA FILE=CAPLUS ABB=ON PLU=ON (BETA INDUC? GENE H3)/AB  
 L5 254 SEA FILE=CAPLUS ABB=ON PLU=ON (L1 OR L2 OR L3 OR L4)  
 L6 1 SEA FILE=REGISTRY ABB=ON PLU=ON CHITOSAN/CN  
 L30 403 SEA BETAIG(W) H3  
 L39 202 SEA FILE=EMBASE ABB=ON PLU=ON L5 OR L30  
 L40 4398 SEA FILE=EMBASE ABB=ON PLU=ON L6 OR CHITOSAN  
 L41 1 SEA FILE=EMBASE ABB=ON PLU=ON L39 AND L40  
 L42 32507 SEA FILE=EMBASE ABB=ON PLU=ON TRANSFORMING GROWTH FACTOR#  
 (2A) BETA  
 L43 37 SEA FILE=EMBASE ABB=ON PLU=ON L42 AND L40  
 L44 3472 SEA FILE=EMBASE ABB=ON PLU=ON ?POLYPHOSPHATE?  
 L45 1 SEA FILE=EMBASE ABB=ON PLU=ON L44 AND L43  
 L46 2 SEA FILE=EMBASE ABB=ON PLU=ON L41 OR L45  
 L47 1824 SEA FILE=EMBASE ABB=ON PLU=ON KIM I?/AU  
 L48 759 SEA FILE=EMBASE ABB=ON PLU=ON CHO B?/AU  
 L49 2557 SEA FILE=EMBASE ABB=ON PLU=ON (L47 OR L48)  
 L50 18 SEA FILE=EMBASE ABB=ON PLU=ON L49 AND L40  
 L51 1 SEA FILE=EMBASE ABB=ON PLU=ON L50 AND (L39 OR L42)  
 L52 0 SEA FILE=EMBASE ABB=ON PLU=ON L51 NOT (L41 OR L46)

=> d ibib ab ct 159 1-6

L59 ANSWER 1 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 1

ACCESSION NUMBER: 2004:291968 CAPLUS Full-text

DOCUMENT NUMBER: 140:309408

TITLE: Chitosan-tripolyphosphate  
 composition for stimulating bone formation and bone  
 consolidation

INVENTOR(S): Kim, In-san; Cho, Byung Chae

PATENT ASSIGNEE(S): Regen Biotech, Inc., S. Korea

SOURCE: PCT Int. Appl., 55 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004028578	A1	20040408	WO 2002-KR1837	20020930
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
CA 2500220	A1	20040408	CA 2002-2500220	20020930
AU 2002330762	A1	20040419	AU 2002-330762	20020930
JP 2006503614	T	20060202	JP 2004-539598	20020930
US 2006018973	A1	20060126	US 2005-528750	20050322

PRIORITY APPLN. INFO.: WO 2002-KR1837 W 20020930

AB The present invention relates to a composition for stimulating bone formation and bone consolidation, more particularly, to a composition for stimulating bone-formation and bone-consolidation by adding a material for stimulating bone-forming and bone consolidation to the mixture of tripolyphosphate and

water-soluble chitosan. The composition of the present invention can stimulate bone formation and bone consolidation in early stages. Compsns. also contain  $\beta$  Ig-h3 and BMP-4 which improved bone formation and consolidation.

CT Bone formation  
CT Bone morphogenetic protein 4  
CT Growth factors, animal  
CT Platelet-derived growth factors  
CT Polyphosphates  
CT Transforming growth factors  
CT Cell adhesion molecules

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L59 ANSWER 2 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 2

ACCESSION NUMBER: 2003:640835 CAPLUS Full-text

DOCUMENT NUMBER: 140:223144

TITLE: Porous **chitosan** scaffold containing microspheres loaded with **transforming growth factor- $\beta$ 1**:  
Implications for cartilage tissue engineering

AUTHOR(S): Kim, Sung Eun; Park, Jae Hyung; Cho, Yong Woo; Chung, Hesson; Jeong, Seo Young; Lee, Eunhee Bae; Kwon, Ick Chan

CORPORATE SOURCE: Biomedical Research Center, Korea Institute of Science and Technology, Seoul, 136-791, S. Korea

SOURCE: Journal of Controlled Release (2003), 91(3), 365-374  
CODEN: JCREEC; ISSN: 0168-3659

PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Damaged articular cartilage, caused by traumatic injury or degenerative diseases, has a limited regenerative capacity and frequently leads to the onset of osteoarthritis. As a promising strategy for the successful regeneration of long-lasting hyaline cartilage, tissue engineering has received increasing recognition. In this study, the authors attempted to design a novel type of porous chitosan scaffold, containing transforming growth factor- $\beta$ 1 (TGF- $\beta$ 1), to enhance chondrogenesis. First, to achieve a sustained release of TGF- $\beta$ 1, chitosan microspheres loaded with TGF- $\beta$ 1 (MS-TGFs) were prepared by the emulsion method, in the presence of tripolyphosphate; with an identical manner, microspheres loaded with BSA, a model protein, were also prepared Both microspheres containing TGF- $\beta$ 1 and BSA had spherical shapes with a size ranging from 0.2 to 1.5  $\mu$ m. From the release expts., it was found that both proteins were slowly released from the microspheres over 5 days in a PBS solution (pH 7.4), in which the release rate of TGF- $\beta$ 1 was much lower than that of BSA. Second, MS-TGFs were seeded onto the porous chitosan scaffold, prepared by the freeze-drying method, to observe the effect on the proliferation and differentiation of chondrocytes. It was obviously demonstrated from in vitro tests that, compared to the scaffold without MS-TGF, the scaffold containing MS-TGF significantly augments the cell proliferation and production of extracellular matrix, indicating the role of TGF- $\beta$ 1 released from the microspheres. These results suggest that the chitosan scaffold containing MS-TGF possesses a promising potential as an implant to treat cartilage defects.

CT Cartilage  
CT Prosthetic materials and Prosthetics  
CT Drug delivery systems  
CT Cartilage formation  
CT Cell differentiation



CT Cell morphology  
 CT Cell proliferation  
 CT Chondrocyte  
 CT Dissolution  
 CT Extracellular matrix  
 CT Particle shape  
 CT Particle size  
 CT Particle size distribution  
 CT Pore size  
 CT Porosity  
 CT Medical goods  
 CT Albumins, uses  
 CT Transforming growth factors

REFERENCE COUNT: 44 THERE ARE 44 CITED REFERENCES AVAILABLE FOR THIS  
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L59 ANSWER 3 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:231930 CAPLUS Full-text

DOCUMENT NUMBER: 141:195159

TITLE: Effects of the controlled-released TGF- $\beta$ 1 from  
 chitosan microspheres on chondrocytes cultured  
 in a collagen/chitosan/glycosaminoglycan  
 scaffold

AUTHOR(S): Lee, Jong Eun; Kim, Ko Eun; Kwon, Ick Chan; Ahn, Hyun  
 Jeong; Lee, Sang-Hoon; Cho, Hyunchul; Kim, Hee Joong;  
 Seong, Sang Chul; Lee, Myung Chul

CORPORATE SOURCE: Orthopedic Surgery, Seoul National University College  
 of Medicine, Seoul, 110-744, S. Korea

SOURCE: Biomaterials (2004), 25(18), 4163-4173

CODEN: BIMADU; ISSN: 0142-9612

PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The objectives of this study were (1) to develop a three-dimensional  
 collagen/chitosan/glycosaminoglycan (GAG) scaffold in combination with  
 transforming growth factor-beta1 (TGF- $\beta$ 1)-loaded chitosan microspheres, and  
 (2) to evaluate the effect of released TGF- $\beta$ 1 on the chondrogenic potential of  
 rabbit chondrocytes in such scaffolds. TGF- $\beta$ 1 was loaded into chitosan  
 microspheres using an emulsion-crosslinking method. The controlled release of  
 TGF- $\beta$ 1, as measured by ELISA, was monitored for 7 days. The porous scaffolds  
 containing collagen and chitosan were fabricated by using a freeze drying  
 technique and crosslinked using 1-ethyl-3-(3-dimethyl aminopropyl)carbodiimide  
 (EDC) in the presence of chondroitin sulfate (CS), as a GAG component. The  
 TGF- $\beta$ 1 microspheres were encapsulated into the scaffold at a concentration of  
 10 ng TGF- $\beta$ 1/scaffold and then chondrocytes were seeded in the scaffold and  
 incubated in vitro for 3 wk. Both proliferation rate and glycosaminoglycan  
 (GAG) production were significantly higher in the TGF- $\beta$ 1 microsphere-  
 incorporated scaffolds than in the control scaffolds without microspheres.  
 Extracellular matrix staining by Safranin O and immunohistochem. for type II  
 collagen were elevated in the scaffold with TGF- $\beta$ 1 microspheres. These  
 results suggest that TGF- $\beta$ 1 microspheres when incorporated into a scaffold  
 have the potential to enhance cartilage formation.

CT Cartilage formation  
 CT Cell proliferation  
 CT Chondrocyte  
 CT Compressive strength  
 CT Dissolution  
 CT Freeze drying

CT Particle size  
 CT Particle size distribution  
 CT Pore size  
 CT DNA  
 CT Castor oil  
 CT Glycosaminoglycans, biological studies  
 CT Drug delivery systems  
 CT Collagens, biological studies  
 CT **Transforming growth factors**

REFERENCE COUNT: 41 THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS  
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L59 ANSWER 4 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2004:951368 CAPLUS Full-text  
 DOCUMENT NUMBER: 142:246238  
 TITLE: Composite for facilitating osteogenesis and  
 osteosclerosis  
 INVENTOR(S): Cho, Byeong Chae; Kim, In San  
 PATENT ASSIGNEE(S): Regen Biotech, Inc., S. Korea  
 SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given  
 CODEN: KRXXA7  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Korean  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
KR 2002076686	A	20021011	KR 2001-16743	20010330
PRIORITY APPLN. INFO.:			KR 2001-16743	20010330

AB An osteogenesis and osteosclerosis facilitating composite is provided to lead  
 neo-bony osteogenesis and normal bone structure, and to prevent the growth of  
 undesirable connective tissue. The osteogenesis and osteosclerosis  
 facilitating composite consists of tripolyphosphate and water soluble  
 chitosan. A ratio of the tripolyphosphate to the water soluble chitosan is  
 20:80 to 80:20 wts. per percent. Preferably, the ratio is 50:50 weight per  
 percent. Addnl., an osteogenesis and osteosclerosis accelerant is added to  
 the composite. The accelerant is selected from a group consisting of beta ig-  
 h3, bone morphogenic protein, TGF-beta, FGF, IGF-1 and PDGF.

CT Bone  
 CT Bone formation  
 CT Bone morphogenetic proteins  
 CT Platelet-derived growth factors  
 CT Prosthetic materials and Prosthetics  
 CT Bone, disease  
 CT **Transforming growth factors**  
 CT Cell adhesion molecules

L59 ANSWER 5 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2001:532546 CAPLUS Full-text  
 DOCUMENT NUMBER: 136:177904  
 TITLE: Effect of chitosan,  $\beta$   
 ig-h3 and human bone morphogenic  
 protein-4 on early bony consolidation in distraction  
 osteogenesis of the canine mandible  
 AUTHOR(S): Kim, Hwan; Han, Sang Hee; Lee, Ju Myung; Shin, Dong  
 Pill; Park, Jae Woo; Cho, Byung Chae; Baik, Bong Soo;  
 Kim, In San; Jang, Kwang Ho; Jang, In Ho  
 CORPORATE SOURCE: Department of Plastic and Reconstructive Surgery,  
 College of Medicine, Kyungpook National University,

SOURCE: Taegu, S. Korea  
 Taehan Songhyong Oekwa Hakhoechi (2001), 28(3),  
 223-232  
 CODEN: TSOHAK; ISSN: 1015-6402  
 PUBLISHER: Korean Society of Plastic and Reconstructive Surgeons  
 DOCUMENT TYPE: Journal  
 LANGUAGE: Korean

AB Sixteen dogs were used to study the effect of bone morphogenic protein (BMP-4),  $\beta$  ig-h3 and chitosan during the early bony consolidation stage in the distracted zones of mandibles. The lateral surface of the mandibular body was exposed in the subperiosteal plane and vertical osteotomy was carried out on the mandibular body. An external distraction device was applied to the mandibular body about 1 cm apart from the osteotomy line. Mandibular distraction was started 5 days after the mandibular osteotomy at a rate of 2 mm per day for a total of 10 mm distraction for 5 days. The exptl. group was divided into 4 groups: control group, BMP-4 group, .beta . ig-h3 group and chitosan group depending on the injected material into the distracted area. Four dogs were allocated to each group. On the day of completion of distraction, 0.5 mL of BMP-4, 0.5 mL of  $\beta$  ig-h3, 0.5 mL of 5% chitosan solution was injected resp. into the distracted area of each group with the same amount of tripolyphosphate in dual syringe for solidification of the injected solution. In the control group, 1 mL of tripolyphosphate was injected into the distracted area. After injection of the study materials, the distraction device was left in place for 4 or 7 wk to allow bony consolidation. Radiographs were taken weekly. Two dogs in each group, a total of eight dogs, were sacrificed in 4 wk, and another eight dogs in 7 wk after completion of distraction. Bone specimens of the distracted mandibles were taken for histol. examination. The mineral d. of the distracted bone was measured during the radiol. procedures and analyzed by the computer. In the radiographs of the distracted areas of the mandibles, the control group has shown a mostly radiolucent zone but the other groups have shown the radiodense zones with various width of central radiolucent zones. The central radiolucent zone became narrower in time and vertical thickness of the radiodense zone was about twice thicker in 7 wk than that of 4 wk after finishing bone distraction. BMP-4 group showed the thickest radiodense zone and the chitosan group shows the thinnest radiodense zone. The mineral d. of bone was highest in the BMP-4 group and lowest in the control group. In the histol. findings of the distracted areas of mandibles, the control group showed whole fibrous tissue but the other groups showed new woven bones with central narrow fibrous interzone. The degree of new bone formation was most remarkable in the BMP-4 group and was least remarkable in the chitosan group. In conclusion, there was an active formation of a new bone in the distracted area of the mandible by injection of BMP-4,  $\beta$  ig- h3 and chitosan. The new bone formation was most remarkable in the BMP-4 group followed by  $\beta$  ig-h3, chitosan and control group. These findings suggest that BMP-4 is clin. worth using for early bony consolidation in the distraction osteogenesis.

CT Bone formation  
 CT Bone morphogenetic protein 4  
 CT Gene, animal

L59 ANSWER 6 OF 6 EMBASE COPYRIGHT (c) 2007 Elsevier B.V. All rights reserved on STN

ACCESSION NUMBER: 2002168133 EMBASE Full-text

TITLE: Role of BMP, .beta.ig-h3, and chitosan in early bony consolidation in distraction osteogenesis in a dog model.

AUTHOR: Kim I.-S.; Park J.W.; Kwon I.C.; Baik B.S.; Cho B.C.

CORPORATE SOURCE: Dr. B.C. Cho, Department of Reconstructive Surgery, School of Medicine, Kyungpook National University, Samduk 2 ga 50,

SOURCE: Taegu 700-721, Korea, Republic of. bccho@knu.ac.kr  
 Plastic and Reconstructive Surgery, (2002) Vol. 109, No. 6,  
 pp. 1966-1977. :  
 Refs: 56  
 ISSN: 0032-1052 CODEN: PRSUAS  
 May 2002

COUNTRY: United States  
 DOCUMENT TYPE: Journal; Article  
 FILE SEGMENT: 009 Surgery  
 027 Biophysics, Bioengineering and Medical  
 Instrumentation

LANGUAGE: English  
 SUMMARY LANGUAGE: English  
 ENTRY DATE: Entered STN: 6 Jun 2002  
 Last Updated on STN: 6 Jun 2002

AB The purpose of this investigation was to study the effect of bone morphogenetic protein (BMP), transforming growth factor **beta- induced gene h3 (.beta.ig-h3)**, and **chitosan** on early bony consolidation in distraction osteogenesis in a dog model. Sixteen dogs were used for this study. The lateral surface of the mandibular body was exposed in the subperiosteal plane and the vertical osteotomy on the mandibular body was extended downward. An external distraction device was applied to the mandibular body, and the mandibular distraction was started 5 days after the operation at a rate of 2 mm/day up to a 10-mm distraction after 5 days. The experimental group was then divided into a control group, a BMP group, a **.beta.ig-h3** group, and a **chitosan** group, depending on the type of implantation material used in the distracted area. On the same day after completing the distraction, BMP, **.beta.ig-h3**, or **chitosan** was implanted into the distracted area. No material was implanted into the distracted area in the control group. After implanting the materials, the distraction device was left in place for 7 weeks to allow for bony consolidation. Four dogs were allocated to each group. Two dogs in each group, a total of eight dogs, were killed 4 weeks after completing the distraction and the other eight dogs were killed after 7 weeks. Serial radiographs were obtained every week after completing the distraction. New bone was generated in the distracted zone in all groups. In the BMP group, the formation of active woven bone was observed throughout the distracted zone, and the new bone appeared to be nearly normal cortical bone 7 weeks after implantation. In the **β ig-h3** and **chitosan** groups, the development of new bone was observed in the distracted zone after 7 weeks; however, the amount was less than that in the BMP group. In the control group, the new bone was observed at the edges of the distracted zone. These findings suggest that BMP seems to be very effective in early bony consolidation in distraction osteogenesis.

CT Medical Descriptors:  
 \*distraction osteogenesis  
 \*bone development  
 dog  
 mandible  
 osteotomy  
 surgical technique  
 surgical anatomy  
 implantation  
 bone radiography  
 ossification  
 tissue injury  
 nonhuman  
 animal experiment  
 animal model  
 controlled study

animal tissue

animal cell

article

priority journal

Drug Descriptors:

\*bone morphogenetic protein

\*transforming growth factor beta

\*chitosan

\*transforming growth factor betal

=>